



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
OSB1999-0307

February 17, 2000

Mr. Fred Patron
U.S. Department of Transportation
Federal Highway Administration
The Equitable Center, Suite 100
530 Center Street NE
Salem, OR 97301

Re: Biological Opinion for the South Yamhill River (Whiteson) Bridge Replacement

Dear Mr. Patron:

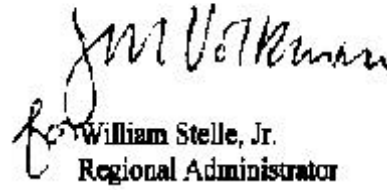
The National Marine Fisheries Service (NMFS) has enclosed the Biological Opinion (Opinion) that addresses your proposed project to replace the South Yamhill River (Whiteson) Bridge in Yamhill County, Oregon. The Biological Assessment (BA) was received on January 22, 1999, and additional information received December 6, 1999, and February 1, 2000. The Federal Highway Administration is the lead agency and the Oregon Department of Transportation designed the project and will administer the construction contract.

This opinion considers the potential effects of the project on Upper Willamette steelhead (*Oncorhynchus mykiss*) which occur in the proposed project area. Upper Willamette steelhead were listed as threatened under the Endangered Species Act on August 10, 1998 (63 FR 24998), and critical habitat was proposed on March 25, 1999 (64 FR 14517). This opinion constitutes formal consultation for the Upper Willamette steelhead. The NMFS concludes that the proposed action is not likely to jeopardize the subject species or destroy, or adversely modify, proposed critical habitat. Included in the enclosed Opinion is an incidental take statement with terms and conditions to minimize the take of the subject species.



If you have any questions regarding this letter, please contact Nancy Munn of my staff in the Oregon State Branch Office at (503) 231-6269.

Sincerely,



William Stelle, Jr.
Regional Administrator

cc: Rose Owens - ODOT
Nick Testa - ODOT (attachment)
Alan Lively - ODOT (attachment)
Randy Reeve - ODFW (attachment)

Endangered Species Act - Section 7
Consultation

BIOLOGICAL AND CONFERENCE OPINION

South Yamhill River (Whiteson) Bridge Replacement
Highway 99W
Yamhill County

Agency: Federal Highway Administration

Consultation Conducted By: National Marine Fisheries Service,
Northwest Region

Date Issued: February 17, 2000

Refer to: OSB1999-0307

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I. BACKGROUND

On January 22, 1999, the National Marine Fisheries Service (NMFS) received a Biological Assessment (BA) and request from the Federal Highway Administration (FHWA) for Endangered Species Act (ESA) section 7 formal consultation for a bridge replacement over the South Yamhill River along Highway 99W in Yamhill County, Oregon. The bridge is called the Whiteson Bridge. NMFS requested additional information and this was received on December 6, 1999, and February 1, 2000. The FHWA is the lead agency for the project. Oregon Department of Transportation (ODOT) has designed the project and will administer the construction contract. This Biological Opinion (Opinion) is based on the information presented in the BA and the result of the consultation process.

FHWA/ODOT has determined that the Upper Willamette (UW) steelhead (*Oncorhynchus mykiss*) may occur within the project area. Since critical habitat has been proposed for UW steelhead, this Opinion serves as the NMFS Conference Opinion until such time that NMFS publishes a final critical habitat rule.

FHWA/ODOT is proposing to replace the existing bridge with a wider bridge along a new alignment to the east. New approach embankments are required adjacent to the existing embankments, which will permanently impact wetland, riparian and floodplain habitats. Riprap will be used to armor the bridge abutments. To mitigate for impacts, 5 acres of floodplain habitat adjacent to the South Yamhill River will be purchased for long-term floodplain restoration.

The effects determination was made using the methods described in *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996). FHWA/ ODOT determined that the proposed action was likely to adversely affect the UW steelhead.

This Opinion reflects the results of the consultation process. The consultation process has involved correspondence and communications to obtain additional information and clarify the BA. As appropriate, modifications to the proposal to reduce impacts to the indicated species were discussed and enacted. This has included reducing the amount of riprap required and reducing the amount of fill in the floodplain. Also, habitat restoration activities were added to the project to compensate for impacts.

The objective of this Opinion is to determine whether the action to replace the Whiteson Bridge is likely to jeopardize the continued existence of the UW steelhead or destroy or adversely modify proposed critical habitat.

II. PROPOSED ACTION

The FHWA/ODOT proposes to replace a deteriorated 1,200-foot multi-span bridge crossing the South Yamhill River on the Pacific Highway west (OR 99W). The existing bridge is located across a

section of the South Yamhill River with a broad floodplain that includes extensive wetlands. The approaches to the bridge are long causeways which were built to cross the floodplain. Consequently, the existing and proposed replacement bridge are quite long. A substantial amount of fill material is used to support the causeways across the floodplain. Construction is expected to begin in 2000 and be completed within 2 years.

Construction of the new bridge will occur 43 feet east of the old structure so that traffic can be staged without building a detour structure. The new structure will be a 20-span bridge with 21 bents. All bents will be constructed within the two year floodplain. By limiting work in the active channel (in the wet) to the in-water work period of July 1st to October 1st, work on the bents will be kept out of the active channel with the exception of the southeast corner of bent #8. All work on bent #8 will be done within a cofferdam to minimize the entrainment of sediment. Riprap will be placed around bents 1 and 21, which are a long distance from the active channel for most of the year.

As part of the bridge construction, new approach embankments are required adjacent to the existing embankments on the north and south side of the bridge. The new embankments will not extend further than the existing ones in a north-south direction. Approximately 15,000 m³ of fill are needed to support the new causeway. Approximately 7,000 m³ of soil will be removed from the old causeway. This results in a net fill of 8,000 m³ for the project. This translates into a 2,095 m² loss of floodplain. Four acres of right-of-way are needed to build this action.

A temporary work bridge will not be required for this project. The pile driver and/or crane will work on dry ground in the floodplain. No pile driving will be done in the active channel with the exception of one corner of bent #8.

As part of the action, the existing bridge will be demolished. This includes the removal of the 44 sets of existing creosote-coated wood piling that currently support the causeway, and the removal of approximately 7,000 m³ of fill from the floodplain. The removal of fill will be done during the in-water work window to minimize sediment movement.

Staging

A staging area has not been selected at this time. However, the contractor will store fuels and other potentially hazardous materials at least 300 feet from the edge of the 2-year floodplain. No vehicles will be stored overnight within 300 feet of the 2-year floodplain, with the exception of the crane and/or pile driver. The crane and pile driver can be refueled within the 2-year floodplain only if measures are taken to ensure that no fuel will be spilled, and equipment is only refueled prior to 1 pm (so they are not sitting overnight with a full tank of gas).

Mitigation

FHWA/ODOT is purchasing a permanent easement of 5 acres of floodplain habitat adjacent to the South Yamhill River as mitigation for impacts to the floodplain associated with the project. The land will be purchased for long-term floodplain protection that will passively restore through time. The land being purchased is adjacent to the bridge and is currently partially used as farmland.

III. BIOLOGICAL INFORMATION AND CRITICAL HABITAT

The UW steelhead Evolutionarily Significant Unit (ESU) was listed as threatened under the ESA by the NMFS on March 25, 1999 (64 FR 14517). Biological information on UW steelhead may be found in Busby et al. (1995, 1996). Critical habitat was proposed for the UW steelhead on February 5, 1999 (64 FR 5740). Critical habitat for UW steelhead is proposed to include the Willamette River and its tributaries above Willamette Falls. The adjacent riparian zone is also included in the designation. This zone is defined as the area that provides the following functions: Shade, sediment, nutrient or chemical regulation, streambank stability, and input of large woody debris or organic matter.

IV. EVALUATING PROPOSED ACTIONS

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NMFS must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the initial steps of (1) defining the biological requirements and current status of the listed species, and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NMFS evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NMFS must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action, (2) the environmental baseline, and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmon's life stages that occur beyond the action area. If NMFS finds that the action is likely to jeopardize, NMFS must identify reasonable and prudent alternatives for the action.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' designated critical habitat. The NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. The NMFS identifies those effects of the action that impair the function of any essential element of critical habitat. The NMFS then considers whether such impairment appreciably

diminishes the habitat's value for the species' survival and recovery. If NMFS concludes that the action will destroy or adversely modify critical habitat it must identify any reasonable and prudent measures available.

For the proposed action, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential elements necessary for juvenile and adult migration, and rearing of the UW steelhead under the existing environmental baseline.

A. Biological Requirements

The first step in the methods NMFS uses for applying the ESA section 7(a)(2) to listed salmon is to define the species' biological requirements that are most relevant to each consultation. NMFS also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NMFS starts with the determinations made in its decision to list UW steelhead for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for UW steelhead to survive and recover to naturally reproducing population levels at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful adult and juvenile migration, and rearing. The current status of the UW steelhead, based upon their risk of extinction, has not significantly improved since the species was listed and, in some cases, their status may have worsened.

B. Environmental Baseline

The current range-wide status of the identified ESU may be found in Busby et al. (1995, 1996). The identified action will occur within the range of UW steelhead. The defined action area is the area that is directly and indirectly affected by the action. The direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the watershed, where actions described in this opinion lead to additional activities, or affect ecological functions, contributing to stream degradation. As such, the action area for the proposed activities include the immediate watershed containing the project and those areas upstream and downstream that may reasonably be affected, temporarily or in the long term. For the purposes of this Opinion, the action area is defined as the streambed and riparian habitat of the South Yamhill River

extending 50 feet upstream of the existing bridge, and extending 1000 feet downstream of the new bridge. The action area includes the broad 2-year floodplain. Other areas of the Yamhill River watershed are not expected to be directly or indirectly impacted.

The existing bridge is located across the South Yamhill River. This river is a tributary of the Yamhill River, which is a tributary of the Willamette River. Land use in the Yamhill River watershed is agriculture and rural residential, with several major urban concentrations. Agricultural activities are present in the immediate project vicinity and have reduced the interaction between the river and the floodplain. A golf course is present within the floodplain on the northwest side of the causeway. Riparian habitat immediately adjacent to the river is narrow but contains mature deciduous trees.

Overall water quality is degraded in the South Yamhill River. The South Yamhill River is on the Oregon Department of Environmental Quality's 303(d) list of water quality limited streams for bacteria, temperature, and flow modification.

Winter-run steelhead reproduce naturally in the South Yamhill River. The reach of the river within the project area is dominated by silty substrate. Habitat use at the site is predominantly migration of adults and juveniles. Steelhead may rear at the site during the winter but water temperatures are likely too high for rearing during the summer.

Based on the best available information on the current status of UW steelhead range-wide; the population status, trends, and genetics; and the poor environmental baseline conditions within the action area (as described in the BA), NMFS concludes that the biological requirements of the identified ESU within the action area are not currently being met. Numbers of UW steelhead are substantially below historic numbers. Long-term trends are decreasing. Recent droughts and change in ocean productivity have probably reduced run sizes. River basins display degraded habitat conditions resulting from agricultural and forestry practices, water diversions, urbanization, mining, and severe recent flooding. The following habitat indicators are either at risk or not properly functioning within the action area: summer water temperatures, turbidity/sediment, large woody debris, pool frequency and quality, off-channel habitat, streambank condition, and floodplain connectivity. Actions that do not maintain or restore properly functioning aquatic habitat conditions would be likely to jeopardize the continued existence of UW steelhead.

V. ANALYSIS OF EFFECTS

A. Effects of Proposed Action

The effects determination in this Opinion was made using a method for evaluating current aquatic conditions, the environmental baseline, and predicting effects of actions on them. This process is described in the document *Making ESA Determinations of Effect for Individual or Grouped*

Actions at the Watershed Scale (NMFS 1996). The effects of actions are expressed in terms of the expected effect - restore, maintain, or degrade - on aquatic habitat factors in the project area.

The proposed action has the potential to cause the following impacts to UW steelhead or proposed critical habitat:

- In-water work will be needed to place one bridge bent within the active channel. By working within the in-water work window, the amount of sediment released into the water column during the in-water construction of the bent will be minimized. Placement of fill and other bents within the 2-year floodplain will also be done during the in-water work window, to maximize the amount of work done in the dry. If done in the dry, some sediment may be entrained when water levels rise. Larger juvenile and adult salmon appear to be little affected by ephemerally high concentrations of suspended sediments that occur during most storms and episodes of snow melt. However, other research demonstrates that feeding and territorial behavior can be disrupted by short-term exposure to turbid water. Localized increases of turbidity during bent construction of the new bridge and the installation and removal of piles for the temporary bridge will likely displace steelhead in the project area and disrupt normal behavior. The effects are expected to be temporary and localized.
- Although the superstructure of the bridge will be pre-cast, some wet concrete will be used. When wet concrete comes in contact with water, the pH of the water changes, creating an acutely toxic situation for fish.
- There will be temporary and permanent impacts to riverbed materials as a result of this project. The construction of bents 7-9 of the new bridge will result in the permanent loss of habitat, and the construction of the bridge approaches will disrupt floodplain-river interactions.
- Riprap will be placed above the 2-year floodplain around the base of bents 1, 2 and bent 21. These bents are several hundred feet from the active channel during ordinary flows. The construction of the bridge bents within the 2-year floodplain and the placement of riprap will result in the loss of riparian and mixed forest vegetation at the north and south ends of the new bridge. The total loss of habitat will be about 0.5 acres. The vegetation loss could also compromise bank stability.
- Removal of the 44 sets of pilings of the existing bridge will open up approximately 2,500 square meters of floodplain habitat. However, the net loss of floodplain habitat is estimated to be 2,500 square meters. River-floodplain interaction is a key element in watershed function, biodiversity, productivity and stability.
- The removal of the 44 sets of creosote treated pilings may increase the toxicity of the water and sediments. Creosote contains over 300 compounds, including a variety of polycyclic aromatic hydrocarbons (PAH). Some PAHs are very toxic and bioconcentrate. The greatest risk to the fish is if the pilings splinter upon removal and parts of the piling are left in the water or the floodplain. Care should be taken to remove the pilings such that splintering does not occur. No pieces of treated wood will be left above the sediment/water interface, or sitting on the floodplain surface.

- Cut and fill activities involved with building the bridge and placing it on its new alignment may cause short-term increases in sediment loading. Increases in sedimentation may occur if unstable slopes within the project area are not adequately stabilized.
- Staging activities may result in a spill of hazardous materials. In addition, operation of machinery on and near the bridge will increase the risk of a hazardous spill in the river.

The effects of these activities on UW steelhead and aquatic habitat factors have been limited by utilizing construction methods and approaches that are intended to avoid or minimize impacts. These include:

- All in-water work will be conducted during the in-water work period of July 1st to October 15th. Adult steelhead will not be migrating during that time period. Juvenile salmon may be rearing in the project area during the in-water work period, although it is unlikely because of high summer water temperatures. Any juveniles rearing in the project area have the potential to be displaced or killed during the in-water work.
- To minimize the potential for contact between wet cement and the river, all work in the water will be done within a cofferdam or a similar structure.
- The cofferdam will also help to minimize the amount of sediment entrained in the river during the in-water construction of the bents, and driving and removal of piles.
- An erosion control plan will be implemented that includes silt fences, sediment filters and routine monitoring. Implementation of erosion and sediment controls should be adequate to minimize sediment inputs into the river until vegetation regrowth occurs.
- All vegetation removed will be replaced at a 1.5:1 ratio with native plant species.
- Hazardous materials, including fuel, will not be stored or transferred within 300 feet of the South Yamhill River or any wetlands. No staging areas or parking areas will occur within 300 feet of any water body. This will reduce the likelihood of a spilled toxic substance reaching the river. Implementation of the Terms and Conditions within this Opinion will further reduce the risk of impacts to fish and the South Yamhill River.

The action also includes activities to mitigate for the in-water work and impacts to riparian habitat, floodplain habitat, and water quality. FHWA/ODOT is purchasing a permanent easement of about 5 acres of floodplain habitat adjacent to the South Yamhill River. A portion of this land is grazed and another portion plowed and planted. This land is frequently flooded during the winter, resulting in increased nutrient loading to the South Yamhill River. Under the proposed action, the land will no longer be farmed or grazed, and will be allowed to revert to natural conditions where natural floodplain function occur. Some planting will occur, but the frequent high water will restore function. The consequence of this mitigation will be reduced water temperatures, improved water quality, increased habitat complexity, and additional fish rearing and holding habitat during high water.

For the proposed action, the NMFS expects that the effects will tend to maintain or restore each of the habitat elements over the long term, greater than one year. However, in the short term, a temporary increase in sediment entrainment and turbidity, and disturbance of riparian and floodplain habitat is expected. Fish may be killed, or more likely, temporarily displaced during the in-water work

(construction of the bridge bents). The potential net effect from the proposed action, including mitigation, is expected to be the maintenance and restoration of functional steelhead habitat conditions.

B. Effects on Critical Habitat

NMFS designates critical habitat based on physical and biological features that are essential to the listed species. Essential features for designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Critical habitat for UW steelhead consists of all waterways below naturally impassable barriers including the project area. The adjacent riparian zone is also included in the designation. This zone is defined as the area that provides the following functions: Shade, sediment, nutrient or chemical regulation, streambank stability, and input of large woody debris or organic matter.

The proposed actions will affect critical habitat. In the short term, a temporary increase of sediments and turbidity and disturbance of riparian habitat is expected. In the long term, a net loss of floodplain habitat will occur. However, the mitigation will result in improved floodplain condition. The mitigation site is partially farmed (grazing and crops) currently. With these activities permanently removed, the site will have an opportunity to passively restore. Also, a golf course is on the northwest side of the bridge and other urban pressures are increasing. By utilizing this as mitigation, future development of the site is precluded. Habitat functions that are expected to improve are water temperature, water quality, floodplain connectivity and interaction, habitat complexity and riparian condition. Consequently, NMFS does not expect that the net effect of this action will diminish the value of the habitat for survival of UW steelhead.

C. Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." The action area is defined as the streambed and riparian habitat of the South Yamhill River extending 50 feet upstream of the existing bridge, and extending 1000 feet downstream of the new bridge. The action area includes the broad 2-year floodplain. A wide variety of actions occur within the watersheds defined within the Opinion. NMFS is not aware of any significant change in non-Federal activities that are reasonably certain to occur within the action area. NMFS assumes that future private and State actions will continue at similar intensities as in recent years. Future FHWA/ODOT transportation projects are planned in the Yamhill River watershed. Each of these projects will be reviewed through separate section 7 consultation processes and are not considered cumulative effects.

VI. CONCLUSION

NMFS has determined based on the available information, that the proposed actions are expected to maintain properly functioning stream habitat conditions within the action area, and improve conditions at the restoration site. Consequently, the proposed actions covered in this Opinion are not likely to jeopardize the continued existence of UW steelhead. NMFS used the best available scientific and commercial data to apply its jeopardy analysis, when analyzing the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects. NMFS applied its evaluation methodology (NMFS 1996) to the proposed action and found that it would cause minor, short-term adverse degradation of anadromous salmonid habitat due to sediment impacts, in-water construction, and habitat loss. These effects will be balanced in the long-term through the proposed mitigation. Direct mortality from this project may occur during the in-water work.

VII. REINITIATION OF CONSULTATION

Consultation must be reinitiated if: The amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; new information reveals effects of the action may affect listed species in a way not previously considered; the action is modified in a way that causes an effect on listed species that was not previously considered; or, a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16). To re-initiate consultation, ODOT must contact the Habitat Conservation Division (Oregon Branch Office) of NMFS.

VIII. REFERENCES

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this opinion.

- Busby, P., S. Grabowski, R. Iwamoto, C. Mahnken, G. Matthews, M. Schiewe, T. Wainwright, R. Waples, J. Williams, C. Wingert, and R. Reisenbichler. 1995. Review of the status of steelhead (*Oncorhynchus mykiss*) from Washington, Idaho, Oregon, and California under the U.S. Endangered Species Act. 102 p. plus 3 appendices.
- Busby, P., T. Wainwright, G.J. Bryant, L.J. Lierheimer, R.S. Waples, and I.V. Lagomarsino. 1995. Status review of west coast steelhead from Washington, Idaho, Oregon, and California
- DEQ 1996. 303d List of Water Quality Limited Streams, as Required Under the Clean Water Act. Oregon Department of Environmental Quality (DEQ), Portland, Or. 1996. (www.deq.state.or.us/wq/303dlist/303dpage.htm).

DEQ 1998. Draft 303d List of Water Quality Limited Streams, as Required Under the Clean Water Act. Oregon Department of Environmental Quality (DEQ), Portland, Or. 1998.
(www.deq.state.or.us/wq/303dlist/303dpage.htm).

DSL 1996. Essential Indigenous Salmonid Habitat, Designated Areas, (OAR 141-102-030). Oregon Division of State Lands. Portland, Or. 1996.

NMFS (National Marine Fisheries Service) 1996. Making Endangered Species Act determinations of effect for individual and grouped actions at the watershed scale. Habitat Conservation Program, Portland, Oregon.

ODFW 1996. Database -- Salmonid Distribution and Habitat Utilization, Arc/Info GIS coverages. Portland, Or. 1996. (rainbow.dfw.state.or.us/ftp/).

IX. INCIDENTAL TAKE STATEMENT

Sections 4 (d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

A. Amount or Extent of the Take

The NMFS anticipates that the action covered by this Opinion has more than a negligible likelihood of resulting in incidental take of UW steelhead because of detrimental effects from increased sediment levels (non-lethal) and the potential for direct incidental take during in-water work (lethal and non-lethal). Effects of actions such as these are largely unquantifiable in the short term, and are not expected to be measurable as long-term effects on steelhead habitat or population levels. Therefore,

even though NMFS expects some low level incidental take to occur due to the actions covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species itself. In instances such as these, the NMFS designates the expected level of take as "unquantifiable." Based on the information in the biological report, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the actions covered by this Opinion. The extent of the take is limited to within the area of project disturbance and extending 1000 feet downstream of the new bridge.

B. Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimizing take of the above species. Minimizing the amount and extent of take is essential to avoid jeopardy to the listed species.

1. To minimize the amount and extent of incidental take from construction activities within the South Yamhill River, measures shall be taken to limit the duration and extent of in-water work, and to time such work when the impacts to fish are minimized.
2. To minimize the amount and extent of incidental take from construction activities in or near the river, effective erosion and pollution control measures shall be developed and implemented. The measures shall minimize the movement of soils and sediment both into and within the river, and will stabilize bare soil over both the short term and long term.
3. To minimize the amount and extent of take from loss of in-stream habitat and to minimize impacts to critical habitat, measures shall be taken to minimize impacts to riparian and in-stream habitat, or where impacts are unavoidable, to replace lost riparian, in-stream, and floodplain function.
4. To ensure effectiveness of implementation of the reasonable and prudent measures, all erosion control measures shall be monitored and evaluated both during and following construction and meet criteria as described below in the terms and conditions.

C. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, ODOT must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. In-water work:
 - a. Passage shall be provided for both adult and juvenile forms of all salmonid species throughout the construction period. FHWA/ODOT designs will ensure passage of fishes as per ORS 498.268 and ORS 509.605.

- b. All work within the active channel of all anadromous fish-bearing systems, or in systems which could potentially contribute sediment or toxicants to downstream fish-bearing systems, will be completed within ODFW's in-water work period (July 1st to October 15th). An extension of the in-water work period will first be approved by, and coordinated with, ODFW and NMFS.
- c. All in-water work will be done within a cofferdam, or similar structure, to minimize the potential for sediment entrainment.
- d. Alteration or disturbance of stream banks and existing riparian vegetation will be minimized. Where bank work is necessary, bank protection material shall be placed to maintain normal waterway configuration.
- e. During ODOT project design, ODOT will work to minimize the amount of riprap used. In unshaded areas above the 5-year floodplain which are not scour-critical, ODOT will attempt to use biological bank control, or to backfill with native soil and plant with willow and other riparian species. This installation will increase riparian shading and cover. Where riprap is necessary, only clean, non-erodible, upland angular rock of sufficient size for long-term bank armoring will be employed. In areas with riprap installation, larger riprap (class 350 metric minimum) will be used preferentially within the 2-year floodplain of systems, where this riprap would come into contact with actively flowing water, and where using larger riprap would not constrict the size of the active channel (larger rock sizes create larger interstitial spaces for juvenile salmonids). Placement will be performed "in the dry" as much as possible, and from the top of the bank where possible. Riprap areas will be planted with willow stakes (and other riparian shrubs/ trees) to increase shading and cover within the 10-year floodplain, where appropriate. Willow stakings will be of a species appropriate for the physiographic province and will be planted at an approximate density of 2000/ ha (generally).

2. Erosion and Pollution Control

An Erosion Control Plan (ECP) will be prepared by ODOT or the contractor and implemented by the Contractor. The ECP will outline how and to what specifications various erosion control devices will be installed to meet water quality standards, and will provide a specific inspection protocol and time response. Erosion control measures will be sufficient to ensure compliance with applicable water quality standards. The ECP shall be maintained on site and shall be available for review upon request.

- a. Erosion Control measures shall include (but not be limited to) the following:
- i. The contractor will have the following on hand: 50 weed-free straw bales, 150 feet of unsupported silt fence, and 25 biobags.
 - ii. Temporary plastic sheeting for immediate protection of open areas (where seeding/ mulching are not appropriate), in accordance with ODOT's standard specifications.
 - iii. Erosion control blankets or heavy duty matting (e.g., jute) may be used on steep unstable slopes in conjunctions with seeding or prior to seeding.
 - iv. Sills or barriers may be placed in drainage ditches along cut slopes and on steep grades to trap sediment and prevent scouring of the ditches. The barriers will be constructed from rock and straw bales.
 - v. Biobags, weed-free straw bales and loose straw may be used for temporary erosion control. Temporary erosion and sediment controls will be used on all exposed slopes during any hiatus in work on exposed slopes.
- b. Effective erosion control measures shall be in-place at all times during the contract. Construction within the 5-year floodplain will not begin until all temporary erosion controls (e.g., straw bales, silt fences) are in-place, downslope of project activities within the riparian area. Erosion control structures will be maintained throughout the life of the contract.
- c. All temporarily-exposed areas will be seeded and mulched. Erosion control seeding and mulching, and placement of erosion control blankets and mats (if applicable) will be completed on all areas of bare soil within 7 days of exposure within 150 feet of waterways, wetlands or other sensitive areas, and in all areas during the wet season (after October 1). All other areas will be stabilized within 14 days of exposure. Efforts will be made to cover exposed areas as soon as possible after exposure.
- d. All erosion control devices will be inspected during construction to ensure that they are working adequately. Erosion control devices will be inspected daily during the rainy season, weekly during the dry season, monthly on inactive sites. Work crews will be mobilized to make immediate repairs to the erosion controls, or to install erosion controls during working and off-hours. Should a control measure not function effectively, the control measure will be immediately repaired or replaced. Additional controls will be installed as necessary.
- e. If soil erosion and sediment resulting from construction activities is not effectively controlled, the engineer will limit the amount of disturbed area to that which can be adequately controlled.

- f. Sediment will be removed from sediment controls once it has reached 1/3 of the exposed height of the control. Whenever straw bales are used, they will be staked and dug into the ground 12 cm. Catch basins shall be maintained so that no more than 15 cm of sediment depth accumulates within traps or sumps.
- g. Where feasible, sediment-laden water created by construction activity shall be filtered before it leaves the right-of-way or enters an aquatic resource area. Silt fences or other detention methods will be installed as close as possible to culvert outlets to reduce the amount of sediment entering aquatic systems.
- h. A supply of erosion control materials (e.g., straw bales and clean straw mulch) will be kept on hand to cover small sites that may become bare and to respond to sediment emergencies.
- i. All equipment that is used for in-stream work will be cleaned prior to entering the two-year floodplain. External oil and grease will be removed, along with dirt and mud. Untreated wash and rinse water will not be discharged into streams and rivers without adequate treatment.
- j. On cut slopes steeper than 1:2 a tackified seed mulch will be used so that the seed does not wash away before germination and rooting occurs. In steep locations, a hydro-mulch will be applied at 1.5 times the normal rate.
- k. Material removed during excavation shall only be placed in locations where it cannot enter sensitive aquatic habitat. Conservation of topsoil (removal, storage and reuse) will be employed.
- l. Measures will be taken to prevent construction debris from falling into any aquatic habitat. Any material that falls into a stream during construction operations will be removed in a manner that has a minimum impact on the streambed and water quality.
- m. Project actions will follow all provisions of the Clean Water Act (40 CFR Subchapter D) and DEQ's provisions for maintenance of water quality standards not to be exceeded within the South Yamhill River (OAR Chapter 340, Division 41). Toxic substances shall not be introduced above natural background levels in waters of the state in amounts which may be harmful to aquatic life. Any turbidity caused by this project shall not exceed DEQ water quality standards.
- n. The Contractor will develop an adequate, site-specific Spill Prevention and Countermeasure or Pollution Control Plan (PCP), and is responsible for containment and removal of any toxicants released. The Contractor will be monitored by the

ODOT Engineer to ensure compliance with this PCP. The PCP shall include the following:

- i. A site plan and narrative describing the methods of erosion/sediment control to be used to prevent erosion and sediment for contractor's operations related to disposal sites, borrow pit operations, haul roads, equipment storage sites, fueling operations and staging areas.
 - ii. Methods for confining and removing and disposing of excess concrete, cement and other mortars. Also identify measures for washout facilities.
 - iii. A spill containment and control plan that includes: notification procedures; specific containment and clean up measures which will be available on site; proposed methods for disposal of spilled materials; and employee training for spill containment.
 - iv. Measures to be used to reduce and recycle hazardous and non-hazardous waste generated from the project, including the following: the types of materials, estimated quantity, storage methods, and disposal methods.
 - v. The person identified as the Erosion and Pollutant Control Manager (EPCM) shall also be responsible for the management of the contractor's PCP.
- o. Areas for fuel storage, refueling and servicing of construction equipment and vehicles will be located at least 300 feet away from the 2-year floodplain. Overnight storage of wheeled vehicles must occur at least 300 feet away from the 2-year floodplain of the South Yamhill River. Overnight storage of non-wheeled vehicles (e.g. crane, pile driver) is allowed within the 2-year floodplain during the in-water work window; however, to minimize the risk of fuel reaching the water, refueling of these vehicles must not occur after 1 pm.
- p. Hazmat booms will be installed in all aquatic systems where:
- i. Significant in-water work will occur, or where significant work occurs within the 5-year floodplain of the system, or where sediment/toxicant spills are possible.
 - ii. The aquatic system can support a boom setup (i.e. the creek is large enough, low-moderate gradient).
- q. Hazmat booms will be maintained on-site in locations where there is potential for a toxic spill into aquatic systems. "Diapering" of vehicles to catch any toxicants (oils, greases, brake fluid) will be mandated when the vehicles have any potential to contribute toxic materials into aquatic systems.

- r. No surface application of nitrogen fertilizer will be used within 50 feet of any aquatic resource.

3. Riparian Habitat Protection Measures

- a. Boundaries of the clearing limits will be flagged by the project inspector. Ground will not be disturbed beyond the flagged boundary.
- b. Alteration of native vegetation will be minimized. Where possible, native vegetation will be clipped by hand so that roots are left intact. This will reduce erosion while still allowing room to work. No protection will be made of invasive exotic species (e.g. Himalayan blackberry)
- c. Riparian understory and overstory vegetation removed will have a replacement rate of 1.5:1. Replacement will occur within the project vicinity where possible and within the watershed at a minimum. Any disturbed riparian areas must be planted with trees and shrubs, at a minimum.
- d. FHWA/ODOT will purchase a permanent easement for 5 acres of habitat within the 2-year floodplain of the South Yamhill River. The site is adjacent to the bridge. The site will passively restore floodplain function. Purchase of the easement will be completed by the time the bridge project is complete.

4. Monitoring

- a. Erosion control measures as described above in 2(d) shall be monitored.
- b. All significant riparian replant areas will be monitored to insure the following:
 - i. Finished grade slopes and elevations will perform the appropriate role for which they were designed.
 - ii. Plantings are performing correctly and have an adequate success rate.
- c. Failed plantings and structures will be replaced, if replacement would potentially succeed. If not, plantings at other appropriate locations will be done.
- d. A contract grow period (3 year minimum) will be required for all riparian mitigation plantings. In extremely unstable or unproductive areas, ODOT may release the contractor from the contract grow period and develop a larger replanting area to compensate for this.

- e. By December 31 of the year following construction, FHWA/ODOT shall submit to NMFS (Oregon Branch) a monitoring report with the results of the monitoring required in terms and conditions (4(a) to 4(c) above).